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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

v.

PACIFIC GAS AND ELECTRIC COMPANY,

Defendant.

Case No. 14-CR-00175-WHA

RESPONSE TO SIXTH REQUEST RE DIXIE FIRE AND SUPPLEMENTAL RESPONSE TO FIFTH FURTHER REQUEST FOR RESPONSES RE DIXIE FIRE

Judge: Hon. William Alsup

Pursuant to the Court's Sixth Request Re Dixie Fire dated December 2, 2021 (Dkt. 1529), PG&E respectfully submits responses to Questions 55 through 57.

In addition, based on its interview of NDCC Operator #3, PG&E supplements its responses to Questions 38 and 42 contained in its Response To Fifth Further Request For Responses Re Dixie Fire, submitted on November 16, 2021 (Dkt. 1515).

Question 38:

After learning, at 14:43, that at least one fuse had blown; that the Troubleman would have difficulty and delays reaching the fuse; and that there was limited cell and radio service, what explanation(s) did the NDCC Operator #2 think was causing the outage, or possibly causing the outage, such that it was prudent not to cut power? Same question, for the Troubleman (Dkt. No. 1474, Exh. JJ-11). Provide sworn answers.

PG&E Supplemental Response:

As reflected in the attached declaration (Ex. RRR), NDCC Operator #3 supervised the work of NDCC Operator #2, an apprentice, on July 13, 2021. NDCC Operator #3 listened in on the call NDCC Operator #2 had with the Dixie Troubleman at 14:53 hours (Dkt 1474-12, Ex. JJ-11). NDCC Operator #3 recalls the Dixie Troubleman advised that he had observed at least one open fuse but had not yet been able to reach the fuses. NDCC Operator #3 thought the cause of the power outage was the open fuse condition described by the Dixie Troubleman. NDCC Operator #3 did not know the cause of the open fuse condition. In NDCC Operator #3's experience, the operation of one or more fuses is a routine event and is not in itself a reason to de-energize the line and cut off power to all users. The operation of fuses is designed to end fault events by preventing current from continuing downstream from the source on the conductors experiencing the fault. In NDCC Operator #3's experience, there are numerous potential causes of fuses operating, with the most common being faults caused by birds, squirrels, tree limbs falling, tree contacts, the wind blowing lines together and other similar events.

At or around the conclusion of the call, NDCC Operator #3 reviewed the real-time ground current and phase load data for Bucks Creek 1101 Line as reported by the RT SCADA

system. He had previously looked at the historical phase loads and ground current for the line, and at the real time data, at or around the hand-off of responsibility for the Bucks Creek 1101 Line, when NDCC Operator #1 had briefed him on the situation, at about 14:00 hours, about an hour before the Dixie Troubleman's call.[1] NDCC Operator #3 did not see in the real time SCADA data any indication of a ground fault or anything in the data indicating a reason to de-energize the entire line.

Question 42:

On July 13, which PG&E employee or contractor were aware that the amps on Phase C had dropped to a steady state of one amp on the Bucks Creek Circuit? (Interview them and advise. Don't limit your answer to "documents.") Did any PG&E employee or contractor see anything in the data or information known about the outage that could indicate ground faults? If so, what? What follow-up did they pursue?

PG&E Supplemental Response:

As noted above, NDCC Operator #3 recalls looking at both the real time phase load and ground current data for the Bucks Creek 1101 Line during his shift on July 13 at around the time of the hand off of responsibility for that line from NDCC Operator #1, and at the real time SCADA data at around the conclusion of the call between NDCC Operator #2 and the Dixie Troubleman. He believes it is likely that he checked the real time SCADA data on other occasions during his shift. He recalls that there was not much load on the line, but does not recall specific information about the amperage on any particular phase. He did not see anything in the SCADA data that he reviewed indicating a ground fault.

Question 55:

In responding to Question No. 38, PG&E represented, "NDCC Operator #2's supervisor, NDCC Operator #3, is currently out ill. PG&E will advise the Court if the supervisor recalls being aware of or consulted about the outage" (Dkt. No. 1515 n. 11). PG&E has, however, submitted dispatch transcripts showing that the NDCC Distribution Operator #3 knew of the general issue because Operator #3 earlier left the Troubleman

[1] NDCC Operator #1 recalls advising NDCC Operator #3 at the shift change about the information NDCC Operator #1 had learned about the outage. PG&E's November 16, 2021 submission inadvertently stated that NDCC Operator #1 recalls advising NDCC Operator #2 about the information when it meant to say NDCC Operator #3.

a voicemail mentioning the "outage or concern." He spoke to the Troubleman directly at 14:59 on July 13 (Dkt. No. 1476-3, Exhs. JJ-10, JJ-13). In fact, Operator #3 appears to have been the last person to speak with the Troubleman, in part about the instructions that Operator #2 gave to the Troubleman, prior to the Troubleman discovering the fire (id. at Exh. JJ-11). Additionally, in responding to Question No. 38, NDCC Operator #2 elided the real question. He answered that he "thought that the cause of the outage at the Cresta Dam might have been the blown fuse" (Dkt. No. 1515 Exh. EEE ¶ 5). The real question is: What did NDCC Distribution Operators #2 and #3 think were the possible cause(s) (including ground faults) that could cause the outage or the fuse to blow, such that it was prudent not to cut the power to the line, at the relevant time (Operator #2: 14:43; Operator #3: 14:59)? Both Operators shall answer, under oath.

PG&E Response:

PG&E refers to the attached declarations of NDCC Operator #3 (Ex. RRR) and NDCC Operator #2 (Ex. SSS), and to the Supplemental Response to Question 38 above.

The operation of fuses is designed to end fault events by preventing current from continuing downstream from the source on the conductors experiencing the fault while leaving power safely on for users upstream of the fuses. Fuses open for many reasons and neither operator knew, or had any information as to, what had caused the fuses to open on the Bucks Creek 1101 Circuit on July 13. That was something the Troubleman was tasked with determining, if possible. As noted below, frequently, the cause of a fuse opening is a transitory event that cannot readily be determined even after the fact.

NDCC Operator #3 also reviewed both the real time and historic ground current and phase load data available in the RT SCADA system for the Bucks Creek 1101 Line and saw in that data no indication of a ground fault or of any reason to de-energize the line.

Question 56:

PG&E has stated: "[A]pproximately 1,125 transformer level and above outages have occurred in HFTDs in PG&E's territory between May 10, 2021 and July 12, 2021" (Dkt. No. 1747 at 7). The Court would like to know, in HFTDs, the scope of causes for blown fuses. A bad transformer does not always blow a fuse. So, when a fuse blows, what have been the reasons, broken down by number and causes? Limit your answer to blown fuses only (without transformer failure where the fuses remain closed).

Answer for 2021 or the most recent period for which PG&E has this information. If this information is unavailable in PG&E's records, then provide the break-down of causes of outages in HFTDs (in 2021 or the most recent period possible). On the Bucks Creek circuit, where were all transformers and couldn't they have all been readily checked? There were no transformers near fuse 17733, true?

PG&E Response:

1. PG&E queried its Integrated Logging Information Systems Operations Database ("ILIS") for the information recorded therein on outages in Level 2 and Level 3 HFTDs between January 1 and December 2, 2021 where the device that operated was a main distribution line fuse (like Fuse 17733). That query returned 3,134 such fuse operations during that period, or on average over nine per day. The breakdown of basic causes listed in the ILIS database for these outages is as follows:

Cause	Count	Percentage
Cause Unknown	1252	39.9%
Vegetation	852	27.2%
Equipment Failure	531	16.9%
Animal	297	9.5%
Third Party Activity	132	4.2%
Environmental	36	1.1%
Company Initiated	29	0.9%
Other	5	0.2%
Total:	**3134**	100.0%

As the data indicate, fuses frequently operate as a result of fault events that cannot be readily identified after the fact.

2. Transformers can be checked for malfunctions; such malfunctions may or may not be visible from the outside; where damage is not visible, other tests would need to be performed to determine whether a malfunction had occurred.

PG&E believes that on July 13, 2021, there were six transformers connected to the Bucks Creek 1101 Circuit—from Bucks Creek Powerhouse, near the substation, to Cresta Dam, at

the end of the circuit.[2] The approximate location of each of these transformers is shown on the map marked as Exhibit TTT, as is the location of Fuse 17733. As indicated on the map, the nearest transformers to Fuse 17733 were: (a) on the source side, the southern-most railroad connection and (b) on the load side, the transformers at the dam and the tunnel.

Getting to all the transformers on the Bucks Creek 1101 Line would take an appreciable period of time, as the transformers located at two of the railroad tie-ins (including the location closest to Fuse 17733) are not accessible from the highway; checking them prior to checking Fuse 17733 would have further delayed the Dixie Troubleman arriving at Fuse 17733 and reporting the fire.

As the data show, checking all of the transformers and confirming that none had malfunctioned would eliminate only a small percentage of potential causes of a main distribution line fuse operating.[3] And eliminating transformers as the cause of the fault would cast no light on what caused the fault in the great majority of instances where a main distribution-line fuse, like Fuse 17733, operates.

Question 57:

PG&E has stated that it introduced Fast Trip Mitigation in the HFTDs after the Dixie Fire. Was Fast Trip Mitigation introduced in all HFTD territory, or in just a portion? If applicable, state what portion. Why wasn't Fast Trip Mitigation introduced long ago?

PG&E Response:

PG&E's Enhanced Powerline Safety Settings program (also known as Fast Trip Mitigation) was initiated on July 28, 2021. EPSS was implemented this year on a portion of PG&E's HFTD territory covering approximately 11,500 High Fire Threat District miles, or 45% of such miles in PG&E's service territory. The in-scope circuits were selected based on a variety

[2] A field inspection conducted on July 6, 2021 indicated that there was an idle transformer at the Rock Creek Powerhouse that had been disconnected from the Bucks Creek 1101 Line.

[3] The ILIS database further breaks down the basic causes into various smaller categories. Of the 3,134 fuse operations, only 129 (or 4.1% of the total) involved transformers.

factors, but a key consideration in the selection process was the subject matter expertise of PG&E's team of Public Safety Specialists (many of whom joined PG&E after serving with CAL FIRE) regarding areas where if an ignition occurred it may have been difficult for firefighters to suppress given the terrain and/or areas that could be prone to fuel-driven fires even in the absence of high winds. Because the experience gained in 2021 proved EPSS to be effective and, in PG&E's judgment, the benefits outweighed the downsides, PG&E intends to expand the use of EPSS in 2022 to all HFTD circuits.

PG&E introduced EPSS after the Dixie Fire and implemented it on an emergency basis in response to historic fire weather conditions in large parts of PG&E's service territory this summer—namely historic drought and heat waves at the same time, resulting in historically dry fuels. This in turn resulted in "the extraordinary and extreme fire behavior being almost continuously observed on large fires like the Dixie Fire . . . *even in the absence of extraordinary ambient fire weather conditions*."[4] Thus, unlike fires that would have been prevented by PG&E's current PSPS models, the Dixie Fire ignited and spread in an extreme manner even in the absence of high winds and during non-Red Flag warning conditions.

EPSS comes with substantial adverse consequences for customers. EPSS results in many more outages for customers, including medical baseline customers, critical infrastructure providers, and public safety partners. Moreover, these outages (unlike PSPS outages) are unplanned and thus come with no warning to allow customers (including medical baseline customers and critical facilities) to prepare; the significant increase in outages present substantial safety risks that must be considered.

In addition to more frequent outages, EPSS also causes longer outages. This is because EPSS purposefully disrupts the typical arrangement for system protection. Generally

[4] *See* Daniel Swain, *Major monsoonal moisture surge to bring fairly widespread California thunderstorms (wetter south, drier north), with NorCal fire weather concerns*, Weather West (July 25, 2021), https://weatherwest.com/archives/10210 (emphasis added).

speaking, distribution grids are arranged with a multitude of fuses that act as a first line of defense to isolate distribution tap lines if there is a disturbance. The fuses are mechanical devices that possess a single time characteristic curve (*i.e.*, one that cannot be adjusted back and forth depending on conditions) that will govern when the fuse will open or "trip". EPSS relies on the much smaller number of line reclosers and circuit breakers that are typically located only at certain points on the main distribution line and that can be adjusted to be made more or less sensitive. Generally speaking, line reclosers are located "upstream" of the fuses that protect the various taps on a circuit, and are programmed to be less sensitive than the fuses so that fuses and reclosers work in a coordinated manner: the fuse typically operates first (*i.e.*, is more sensitive) and de-energizes a relatively small section of the circuit; the recloser is less sensitive and operates second, only if the fuses were unable to isolate the fault. In EPSS, however, the traditional and intended system design is upended and the line recloser is set to be more sensitive than the fuses to cause faster trips. Because there are far fewer line reclosers and circuit breakers on a circuit than fuses, the opening of reclosers and circuit breakers typically results in much larger areas being de-energized by EPSS. That makes checking for the cause of the fault and restoration a significantly lengthier process. While there are substantial downsides to EPSS, PG&E felt it was appropriate to implement EPSS this summer given the extreme weather conditions. PG&E concluded it would be worthwhile to implement this program notwithstanding uncertainty over how frequent, and severe, outages would be and to what extent ignitions would be reduced. PG&E's implementation of EPSS across approximately 11,500 miles in 2021 provided evidence that EPSS's benefits outweigh its substantial downsides, but that was not an obvious result when the program was implemented. As PG&E expands the use of EPSS in 2022 to all HFTD circuits, PG&E is also intent on identifying and taking steps to mitigate the impacts to its customers.

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Respectfully Submitted,

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